

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. – 85. (Canceled)

86. (Currently amended) A sulfatase-producing cell wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased, wherein the cell expresses:

(i) a sulfatase, wherein the sulfatase is (a) an endogenous sulfatase, wherein the gene encoding the endogenous sulfatase comprises a heterologous promoter upstream of an endogenous sulfatase gene genomic locus ~~the endogenous sulfatase is activated by insertion of a strong promoter~~, or (b) an exogenous sulfatase encoded by heterologous DNA introduced into the cell, ~~and wherein expression of the sulfatase is increased as compared to expression in the same cell type without the activated form of the sulfatase~~; and

(ii) a Formylglycine Generating Enzyme, wherein the Formylglycine Generating Enzyme is (a) an endogenous Formylglycine Generating Enzyme [[of]] comprising amino acids 34-374 of SEQ ID NO:2 or SEQ ID NO:2, or SEQ ID NO:2, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78; wherein the gene encoding the endogenous Formylglycine Generating Enzyme comprises a heterologous promoter upstream of an endogenous Formylglycine Generating Enzyme gene genomic locus ~~the endogenous Formylglycine Generating Enzyme is activated by insertion of a strong promoter~~, or (b) an exogenous Formylglycine Generating Enzyme [[of]] comprising amino acids 34-374 of SEQ ID NO:2 or SEQ ID NO:2 that is encoded by heterologous DNA introduced into the cell, or SEQ ID NO:2, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78, ~~and wherein expression of the Formylglycine Generating Enzyme is increased as compared to expression in the same cell type without the activated form of the Formylglycine Generating Enzyme~~,

wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 5% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme of (ii).

87. (Currently amended) The sulfatase-producing cell of claim 86, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 10% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme of (ii).

88. (Currently amended) The sulfatase-producing cell of claim 86, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 20% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme of (ii).

89. (Currently amended) The sulfatase-producing cell of claim 86, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 50% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme of (ii).

90. (Currently amended) The sulfatase-producing cell of claim 86, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 100% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme of (ii).

91. (Withdrawn) A sulfatase produced by a sulfatase-producing cell of any one of claims 86-90.

92. (Currently amended) The sulfatase-producing cell of claim 86, wherein the cell is a prokaryotic cell, and wherein the Formylglycine Generating Enzyme is an exogenous Formylglycine Generating Enzyme.

93. (Currently amended) The sulfatase-producing cell of claim 86, wherein the cell is a eukaryotic cell, and wherein the Formylglycine Generating Enzyme is an exogenous Formylglycine Generating Enzyme.

94. (Currently amended) The sulfatase-producing cell of claim 93, wherein the eukaryotic cell is a mammalian cell, and wherein the Formylglycine Generating Enzyme is an exogenous Formylglycine Generating Enzyme.

95. (Currently amended) The sulfatase-producing cell of claim 86 ~~claim 93~~, wherein the ~~eukaryotic~~ cell is a human cell.

96. (Previously presented) The sulfatase-producing cell of claim 86, wherein the sulfatase is selected from the group consisting of Iduronate 2-Sulfatase, Sulfamidase, N-Acetylgalactosamine 6-Sulfatase, N-Acetylglucosamine 6-Sulfatase, Arylsulfatase A, Arylsulfatase B, Arylsulfatase C, Arylsulfatase D, Arylsulfatase E, Arylsulfatase F, Arylsulfatase G, HSulf-1, HSulf-2, HSulf-3, HSulf-4, HSulf-5, and HSulf-6.

97. – 100. (Canceled)

101. (Currently amended) A sulfatase-producing cell wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased, wherein the cell expresses:

(i) a sulfatase, wherein the sulfatase is (a) an endogenous sulfatase, wherein the gene encoding the endogenous sulfatase comprises a heterologous promoter upstream of an endogenous sulfatase gene genomic locus ~~the endogenous sulfatase is activated by insertion of a strong promoter~~, or (b) an exogenous sulfatase encoded by heterologous DNA introduced into the cell ~~, and wherein expression of the sulfatase is increased as compared to expression in the same cell type without the activated form of the sulfatase~~; and

(ii) a Formylglycine Generating Enzyme, wherein the Formylglycine Generating Enzyme is (a) an endogenous Formylglycine Generating Enzyme, wherein the gene encoding the endogenous Formylglycine Generating Enzyme comprises a heterologous promoter upstream of an endogenous Formylglycine Generating Enzyme gene genomic locus ~~the endogenous Formylglycine Generating Enzyme is activated by insertion of a strong promoter~~, or (b) an

exogenous Formylglycine Generating Enzyme encoded by heterologous DNA introduced into the cell, the Formylglycine Generating Enzyme of (a) or (b) having:

an amino acid sequence that comprises an amino acid sequence that has at least 95% identity to the amino acid sequence of amino acids 34-374 of SEQ ID NO:2 or SEQ ID NO:2, or SEQ ID NO:2, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78;

wherein expression of the Formylglycine Generating Enzyme is increased as compared to expression in the same cell type without an activated form of the endogenous Formylglycine Generating Enzyme or the exogenous Formylglycine Generating Enzyme;

wherein the Formylglycine Generating Enzyme is capable of forming L-C α -formylglycine on a sulfatase; and

wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 5% as compared to the ratio in the same cell type without the activated form of the endogenous Formylglycine Generating Enzyme or the exogenous Formylglycine Generating Enzyme of (ii).

102. (Currently amended) The sulfatase-producing cell of claim 101, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 10% as compared to the ratio in the same cell type without the ~~activated form of the endogenous Formylglycine Generating Enzyme or the exogenous~~ Formylglycine Generating Enzyme of (ii).

103. (Currently amended) The sulfatase-producing cell of claim 101, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 20% as compared to the ratio in the same cell type without the ~~activated form of the endogenous Formylglycine Generating Enzyme or the exogenous~~ Formylglycine Generating Enzyme of (ii).

104. (Currently amended) The sulfatase-producing cell of claim 101, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 50% as compared to the ratio in the same cell type without the ~~activated form of the endogenous Formylglycine Generating Enzyme or the exogenous~~ Formylglycine Generating Enzyme of (ii).

105. (Currently amended) The sulfatase-producing cell of claim 101, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 100% as compared to the ratio in the same cell type without the ~~activated form of the endogenous Formylglycine Generating Enzyme or the exogenous Formylglycine Generating Enzyme of (ii).~~

106. (Withdrawn) A sulfatase produced by a sulfatase-producing cell of claim 101.

107. (Currently amended) The sulfatase-producing cell of claim 101, wherein the cell is a prokaryotic cell, and wherein the Formylglycine Generating Enzyme is an exogenous Formylglycine Generating Enzyme.

108. (Currently amended) The sulfatase-producing cell of claim 101, wherein the cell is a eukaryotic cell, and wherein the Formylglycine Generating Enzyme is an exogenous Formylglycine Generating Enzyme.

109. (Currently amended) The sulfatase-producing cell of claim 108, wherein the eukaryotic cell is a mammalian cell, and wherein the Formylglycine Generating Enzyme is an exogenous Formylglycine Generating Enzyme.

110. (Currently amended) The sulfatase-producing cell of claim 101 ~~claim 108~~, wherein the ~~eukaryotic~~ cell is a human cell.

111. (Previously presented) The sulfatase-producing cell of claim 101, wherein the sulfatase is selected from the group consisting of Iduronate 2-Sulfatase, Sulfamidase, N-Acetylgalactosamine 6-Sulfatase, N-Acetylglucosamine 6-Sulfatase, Arylsulfatase A, Arylsulfatase B, Arylsulfatase C, Arylsulfatase D, Arylsulfatase E, Arylsulfatase F, Arylsulfatase G, HSulf-1, HSulf-2, HSulf-3, HSulf-4, HSulf-5, and HSulf-6.

112. (Withdrawn) The sulfatase-producing cell of claim 101, wherein the Formylglycine Generating Enzyme comprises a subdomain 3, wherein the subdomain 3 comprises a GFR motif.

113. (Cancel)

114. (Cancel)

115. (Cancel)

116. (Currently amended) The sulfatase-producing cell of claim 86, wherein the Formylglycine Generating Enzyme is an endogenous Formylglycine Generating Enzyme ~~[[of]]~~ that comprises SEQ ID NO:2, ~~wherein the endogenous Formylglycine Generating Enzyme is activated by a strong promoter.~~

117. (Currently amended) The sulfatase-producing cell of claim 86, wherein the Formylglycine Generating Enzyme is an exogenous Formylglycine Generating Enzyme ~~[[of]]~~ that comprises SEQ ID NO:2.

118. (Currently amended) The sulfatase-producing cell of claim 101, wherein the Formylglycine Generating Enzyme is an endogenous Formylglycine Generating Enzyme; ~~wherein the endogenous Formylglycine Generating Enzyme is activated by a strong promoter~~ and comprises an amino acid sequence that has at least 95% identity to the amino acid sequence of SEQ ID NO:2.

119. (Previously presented) The sulfatase-producing cell of claim 101, wherein the Formylglycine Generating Enzyme is an exogenous Formylglycine Generating Enzyme and comprises an amino acid sequence that has at least 95% identity to the amino acid sequence of SEQ ID NO:2.

120. (Currently amended) The sulfatase-producing cell of claim 86, wherein the Formylglycine Generating Enzyme is an endogenous Formylglycine Generating Enzyme ~~[[of]]~~

that comprises amino acids 34-374 of SEQ ID NO:2; ~~wherein the endogenous Formylglycine Generating Enzyme is activated by a strong promoter.~~

121. (Currently amended) The sulfatase-producing cell of claim 86, wherein the Formylglycine Generating Enzyme is an exogenous Formylglycine Generating Enzyme ~~[[of]]~~ that comprises amino acids 34-374 of SEQ ID NO:2.

122. (Currently amended) The sulfatase-producing cell of claim 101, wherein the Formylglycine Generating Enzyme is an endogenous Formylglycine Generating Enzyme; ~~wherein the endogenous Formylglycine Generating Enzyme is activated by a strong promoter~~ and comprises an amino acid sequence that has at least 95% identity to the amino acid sequence of amino acids 34-374 of SEQ ID NO:2.

123. (Previously presented) The sulfatase-producing cell of claim 101, wherein the Formylglycine Generating Enzyme is an exogenous Formylglycine Generating Enzyme and comprises an amino acid sequence that has at least 95% identity to the amino acid sequence of amino acids 34-374 of SEQ ID NO:2.